



## Description

The DMN2053U uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

## General Features

$V_{DS} = 20V$   $I_D = 6.0A$

$R_{DS(ON)} < 27m\Omega @ V_{GS}=4.5V$

## Application

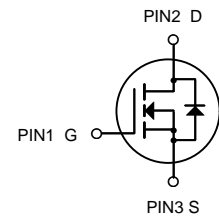
Battery protection

Load switch

Uninterruptible power supply



SOT-23



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
DMN2053U	SOT-23	HXY MOSFET	3000

## Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current-Continuous	6	A
$I_{DM}$	Drain Current-Pulsed (Note 1)	25	A
$P_D$	Maximum Power Dissipation	0.35	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	100	$^\circ C/W$



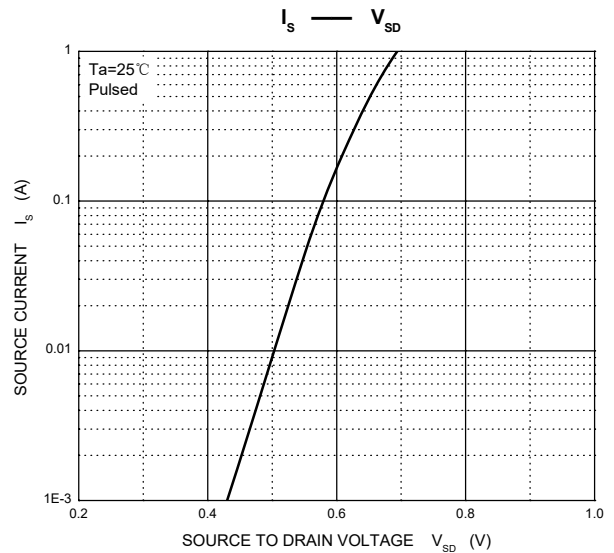
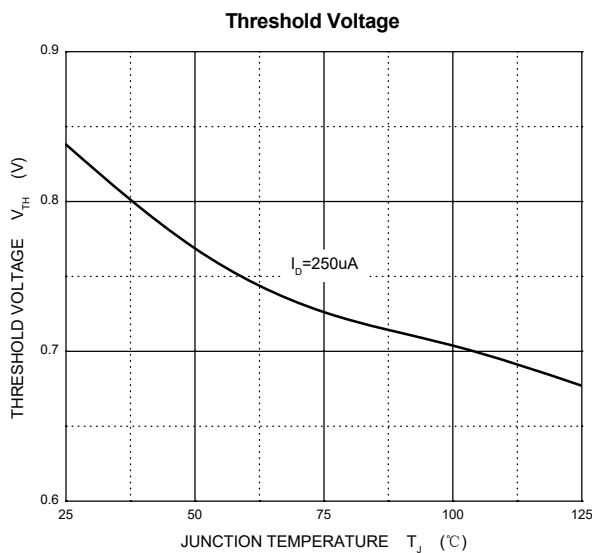
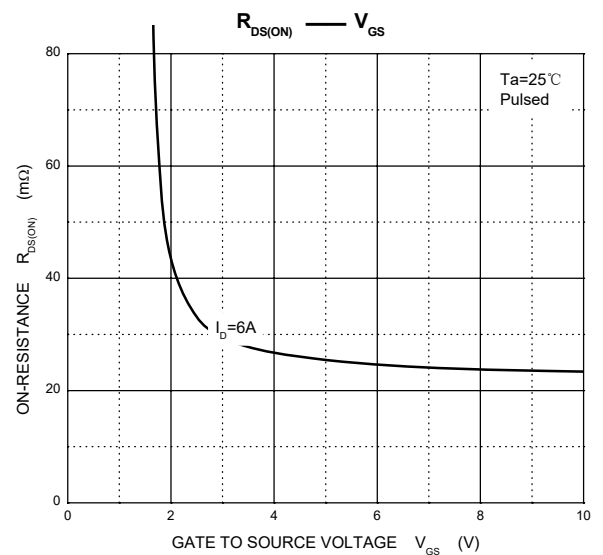
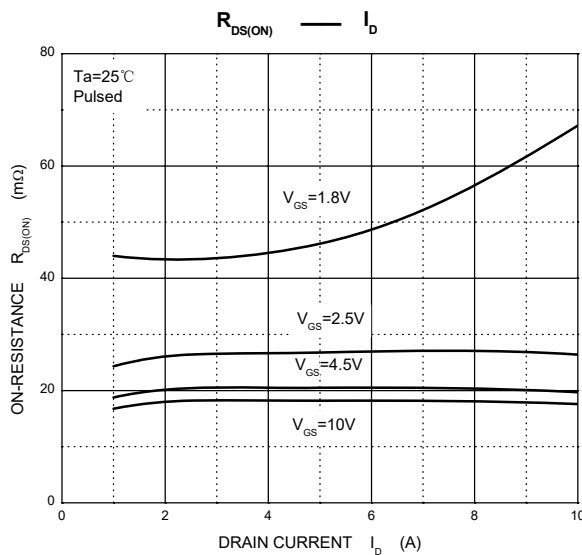
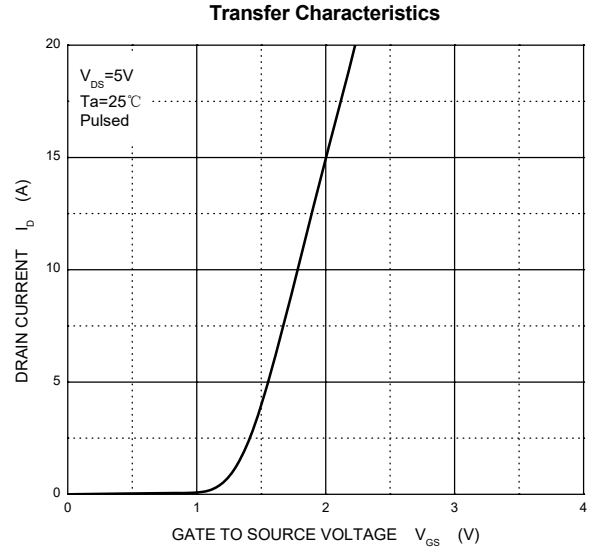
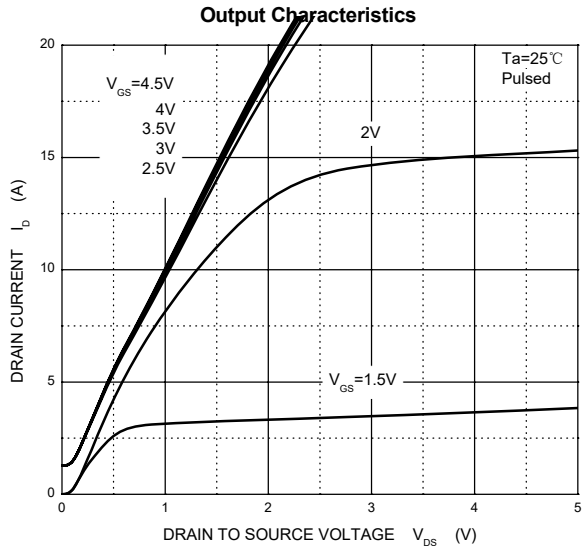
**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	20			V
Gate-source leakage current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±12V			±100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 16V, V <sub>GS</sub> = 0V			1.0	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.5	0.7	1.0	V
Drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A		22	27	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 4.0A		35	42	
		V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 2.0A			73	
Diode forward voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A		0.75	1	V
Forward transconductance	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 3.8A	4			S
<b>DYNAMIC PARAMETERS*</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz		630		pF
Output capacitance	C <sub>oss</sub>			164		
Reverse transfer capacitance	C <sub>rss</sub>			137		
Gate resistance	R <sub>g</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz		1.5		Ω
<b>SWITCHING PARAMETERS*</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> = 5V, V <sub>DS</sub> = 10V, R <sub>L</sub> = 1.7Ω, R <sub>GEN</sub> = 6Ω		5.5		ns
Rise time	t <sub>r</sub>			14		
Turn-off delay time	t <sub>d(off)</sub>			29		
Fall time	t <sub>f</sub>			10.2		

\*These parameters have no way to verify.

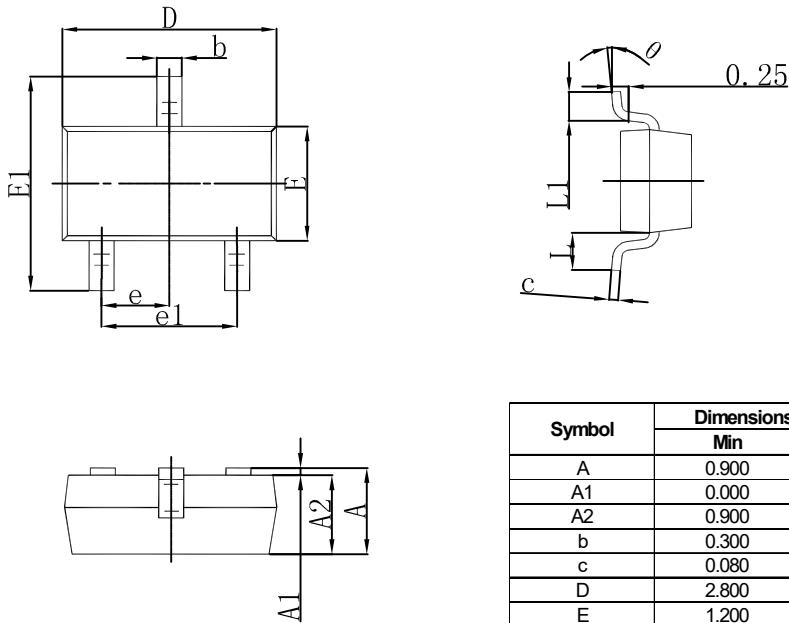


### Typical Characteristics



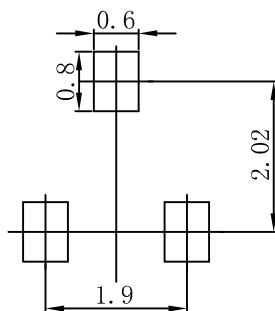


### SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.



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